

**Water Body Fact Sheets for 2002
Section 303(d) List Update
Lahontan Region**

SUSANVILLE HYDROLOGIC UNIT

**California Regional Water Quality Control Board, Lahontan Region
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Note: This packet contains water body-specific fact sheets for three waters of the Susanville Hydrologic Unit. Two additional water bodies, Amedee Hot Springs and Wendel Hot Springs, are also proposed for delisting. See the entries for these water bodies in the summary fact sheet for “Nine Naturally Impaired Waters.”

TOP SPRING, RADIATION
2002 303(d) Fact Sheet
Delisting

Rationale for Delisting

Top Spring, located in Lassen County west of Honey Lake, is proposed for delisting because the source of radioactivity is entirely natural. Because no human sources or discharges are involved, the radioactive elements in question are not “pollutants” under the definition in the Clean Water Act. See the Lahontan Regional Board staff report for a discussion of natural impairment in relation to Section 303(d) listing.

Table 1. Examples of Radiation Data for Top Spring.

Sampling or Reporting Date	Parameter	Radioactivity (pCi/L)*
2-25-86	Gross alpha activity	11.3
4-1-86	Gross alpha activity	25.3
4-1-86	Uranium	13.5
4-1-86	Total Radium	1.3
4-5-86	Gross alpha activity	27
4-5-86	Radium 226	<1
4-5-86	Radium 228	<1
4-5-86	Uranium	26
7-22-86 “upper spring”	Gross alpha activity	10.0
11-3-86	Gross alpha activity	31.1

*pCi/L = picocuries per liter.

Table 1 summarizes radioactivity data from several sampling dates (see Koehne, 1998). In addition, a sample from the Laufman Ranger Station sink taken on March 4, 1986, which was a composite sample of almost all drinking water sources, had a gross alpha activity of 39.96 pCi/L.

In 1987, the Plumas National Forest geologist reviewed the available information and concluded that the “top spring” had radioactivity levels from two to 40 and more times higher than all of the other water sources then being sampled. By 1987, gross alpha activity in the top spring had decreased to 4.84 pCi/L, and this parameter had been decreasing since the earlier tests..

In the 1980s, Top Spring was in violation of the water quality objective for radioactivity, the State drinking water Maximum Contaminant Level (MCL). No recent data are available. Current MCLs and other water quality goals, summarized in California Regional Water Quality Control Board, Central Valley Region, 2000, are as follows:

Radioactivity, Gross Alpha: State and federal primary MCLs= 15 pCi/L; federal MCL goal= 0 pCi/L

Uranium: State primary MCL= 20 pCi/L; federal MCL= 20 micrograms per liter (ug/L) or 30 pCi/L; U.S. Environmental Protection Agency (USEPA) IRIS Reference Dose as a Drinking Water Level = 20 ug/L.

Top Spring, Radiation

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The California Office of Environmental Health Hazard Assessment (OEHHA) has recently established a Public Health Goal for naturally occurring uranium in drinking water, based on its radioactivity. This Public Health Goal is 0.5 parts per billion (ppb) or 0.43 pCi/L.

Watershed Characteristics

“Top Spring” (not an official geographic name) is a natural spring located near the U.S. Forest Service Laufman Ranger Station in the Diamond Mountains west of Honey Lake in Lassen County (latitude 40.143°N, longitude 120.353°W). The name comes from the fact that it was the uppermost of several springs sampled during the 1980s. It was fully developed and used as domestic water supply for the ranger station (including 4-5 residences, 20-30 day workers, and possibly two campgrounds) until the radioactivity was discovered. An alternate domestic supply has since been developed, but the spring is still contained within a pipe.

Information Sources

California Office of Environmental Health Hazard Assessment, 2001. *Public Health Goals for Chemicals in Drinking Water: Uranium, 2001.*

California Regional Water Quality Control Board, Central Valley Region, 2000. *A Compilation of Water Quality Goals, 2000.*

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region.*

California Regional Water Quality Control Board, 1998. Letter from Ranjit S. Gill to Ralf Koehne, U.S. Forest Service, Plumas National Forest. Request for Water Quality Information on “Top Spring” for Use in Development of Total Maximum Daily Loads.

California Regional Water Quality Control Board, Lahontan Region, 2000. Email from Peter J. Fischer to Judith Unsicker, “top springs,” February 22, 2000.

California Regional Water Quality Control Board, Lahontan Region, 2001. *Staff Report on Recommended Changes in Lahontan Regions Section 303(d) List of Impaired Surface Water Bodies.*

Hinrich, R.L., 1986. Summaries of telephone calls regarding samples at Laufman Ranger Station. (California Dept. of Health Services, Office of Drinking Water, Redding).

Koehne, R., 1998. Memo to Ranjit S. Gill and Peter Fischer, Top Springs Water Reports. U.S.D.A. Forest Service, Plumas National Forest, March 31, 1998.

EAGLE LAKE, ORGANIC ENRICHMENT/LOW D.O
2002 303(d) Fact Sheet
Clarification of Existing Listing

Summary of Proposed Action

The current single listing for Eagle Lake, which describes beneficial use problems, is recommended to be changed to separate listings for nitrogen and phosphorus to reflect the actual pollutants involved.

Description of Problem

The descriptor “Organic Enrichment/Low D.O. [Dissolved Oxygen]” is from a limited picklist of problem types associated with an earlier computer database. It does not actually describe pollutants requiring TMDLs. Eagle Lake is currently Section 303(d) listed as the result of a fish kill which occurred in the late 1980s, presumably as a result of oxygen depletion due to high phytoplankton productivity and consequent high biochemical oxygen demand. No fish kills have occurred since that time, and the 1980s kill may have been related to higher temperatures and low lake levels during a prolonged drought. However, there is other evidence of the occurrence of eutrophication, including algae blooms. These problems can best be addressed through TMDLs for nutrients (phosphorus and nitrogen). The current numerical water quality objectives for nutrients in Eagle Lake were set at levels observed in the early 1980s, and may not be protective of beneficial issues. As a prelude to TMDL development, Regional Board staff should review current and historic monitoring data in relation to the scientific literature on eutrophication, and recommended state and federal nutrient criteria for Eagle Lake’s “ecoregion”. Revisions in water quality objectives for nitrogen and phosphorus may be appropriate. Depending on which nutrient proves to be limiting, only one TMDL may be necessary.

Watershed Characteristics

Eagle Lake in Lassen County, with an area of 25,000 acres, is the second largest natural freshwater lake entirely within California. It is located in a closed basin and is a remnant of prehistoric Lake Lahontan. Soils in the watershed are of volcanic origin. The lake has three almost-separate basins with different depths, degrees of stratification, and phytoplankton productivity. Its largest tributary is Pine Creek. Eagle Lake supports an endemic subspecies of rainbow trout adapted to its high alkalinity, and large breeding bird colonies. The lake is a Department of Fish and Game “Significant Natural Area” due to the presence of the Eagle Lake trout, Eagle Lake tui chub, double crested cormorant, and California Gull. Sandhill cranes are also found in the watershed.. Recreation is an important use: the Eagle Lake trout fishery is valued at \$1 million/year. Much of the watershed is in public ownership; there are several small residential subdivisions. Since the 1980s, the Lahontan Regional Board has prohibited septic system discharges in portions of the watershed and has worked toward controls on livestock grazing in order to reduce nutrient loading to the lake.

**Eagle Lake, Organic Enrichment, Low D.O.
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TMDL Priority

Eagle Lake has a high priority for development of TMDLs, and the estimated end date for TMDL completion (through Regional Board adoption of Basin Plan amendments) is currently 2008.

Information Sources

California Regional Water Quality Control Board, Lahontan Region, 1994. Water Body Fact Sheet for "Eagle Lake (2)."

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region*.

California Regional Water Quality Control Board, Lahontan Region, 2001. *Staff Report on Recommended Changes to Lahontan Region's Section 303(d) List of Impaired Surface Water Bodies*.

NINE NATURALLY IMPAIRED WATERS, SALINITY, METALS, AND ARSENIC
2002 303(d) Fact Sheet
Delisting

Rationale for Delisting

The nine water bodies listed in Tables 1 and 2 are saline or geothermal surface waters which were listed in the late 1980s or early 1990s for salinity and/or toxic trace metals. Although constituents exceed drinking water standards, all of these water bodies were given potential Municipal and Domestic Supply (MUN) beneficial use designations as a result of Basin Plan amendments which applied the MUN use to almost all waters in the Lahontan Region. The Regional Board amended its Basin Plan in 2000 to remove the MUN use, and the conflict with drinking water standards, for the waters in Table 1. These amendments have been approved by the State Board and are pending final approvals from other agencies. Regional Board staff conducted a scientific literature review and prepared a detailed Use Attainability Analysis which shows that:

- These waters meet the “Sources of Drinking Water Policy” (State Water Resources Control Board Resolution 88-63) criteria for exclusion from the MUN use due to their poor quality, and are unlikely to be in demand as drinking water due to the relatively small amounts of water available;
- The salts and trace elements affecting these water bodies come from natural sources (volcanic, geothermal, and/or evaporative concentration in closed basins over geologic time);
- Saline and geothermal waters support unique biological communities adapted to their extreme environmental conditions, and should not be considered “impaired” in relation to freshwater aquatic life criteria. The U.S. Environmental Protection Agency’s (USEPA’s) 1997 guidance for the development of site specific aquatic life criteria states: *“For aquatic life uses, where the natural background concentration for a specific parameter is documented, by definition that concentration is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans.”*

These waters, and other “naturally impaired” waters in the Lahontan Region, are recommended for removal from the Section 303(d) list because the salts and trace elements in question are not “pollutants” under the definition in the Clean Water Act. See the Regional Board staff report on the Section 303(d) List update for further discussion of naturally impaired waters in relation to listing.

Because of the extensive documentation already provided in the Use Attainability Analysis, separate fact sheets have not been prepared for these waters.

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Table 1. Naturally Impaired Waters Addressed in Lahontan Region's 2000 Basin Plan Amendments

Water Body Name	County	HU No.	Reason for Listing
Wendel Hot Springs	Lassen	637.20	Metals
Amedee Hot Springs	Lassen	637.20	Metals
Hot Creek	Mono	631.40	Metals
Fales Hot Springs	Mono	631.40	Metals
Little Hot Creek	Mono	603.10	Arsenic
Little Alkali Lake	Mono	603.10	Arsenic
Deep Springs Lake	Inyo	605.00	Salinity/TDS/Chlorides
Keough Hot Springs	Inyo	603.00	Metals
Amargosa River	Inyo/San Bernardino	609.00	Salinity/TDS/Chlorides

Table 2. Summary of Compliance With Drinking Water Criteria for Nine "Naturally Impaired" Waters (from Use Attainability Analysis report).

Water Body Name	Sources of Drinking Water Policy TDS Threshold (3000 mg/L) Exceeded?	Parameters for Which Other Standards or Criteria are Exceeded	Water Quantity Considerations
Wendel Hot Springs	No	TDS, specific conductance, arsenic, sulfate, fluoride, sodium	Flow in natural springs reduced due to nearby geothermal development.
Amedee Hot Springs	No	TDS, sulfate, fluoride, boron, sodium	Flow in natural springs reduced due to nearby geothermal development.
Fales Hot Springs	No	TDS, specific conductance, sulfate, fluoride, arsenic, copper, molybdenum, lead, aluminum	
Hot Creek	No	Specific conductance, fluoride, boron	
Little Hot Creek	No	Arsenic, beryllium, specific conductance, boron, lead, fluoride, antimony.	Annual flow ca. 1000 afa; evaporation increases salinity
Little Alkali Lake	Yes	TDS, Arsenic	Ephemeral
Keough Hot Springs	No	TDS	Flow 600 gallons per minute
Deep Springs Lake	Yes	TDS, specific conductance, pH	Ephemeral
Amargosa River	Yes (in Death Valley)	TDS, specific conductance, arsenic, sulfate, sodium, chloride, fluoride, boron.	Intermittent, variable annual flows

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Information Sources

California Regional Water Quality Control Board, Lahontan Region, 1995. *Water Quality Control Plan for the Lahontan Region*.

California Regional Water Quality Control Board, Lahontan Region, 2000. *Use Attainability Analysis for Nine “Naturally Impaired” Waters of the Lahontan Region*, April 2000.

California Regional Water Quality Control Board, Lahontan Region, 2001. *Staff Report on Recommended Changes to Lahontan Region’s Section 303(d) List of Impaired Surface Water Bodies*.

California State Water Resources Control Board, 1988. Resolution 88-63, Sources of Drinking Water Policy.

U.S. Environmental Protection Agency, 1997. Establishing Site Specific Aquatic Life Criteria Equal to Natural Background. Memorandum dated November 5, 1997 from Tudor T. Davies, Director, Office of Science and Technology, USEPA Office of Water.